

ABSTRACT OF THE DISCLOSURE

ESD protection devices and methods of forming them are provided in this invention. By employing the thin gate oxide fabricated by a dual gate oxide process and breakdown-enhanced layers, ESD protection devices with a lower trigger voltage are provided. The NMOS structure for ESD protection according to the present invention has islands, a control gate and breakdown-enhanced layers. These islands as well as the breakdown-enhanced layers overlapping the drain region of the NMOS reduce the breakdown voltage of the PN junction in the drain region, thereby reducing the ESD trigger voltage and improving the ESD protection level of the NMOS. Furthermore, the invention is applicable to general integrated-circuit processes as well as various ESD protection devices.